519,097

PCT/EP2003/007933

Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference O.Z. 6078-WO	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/EP2003/007933	International filing date (*day/month/year*) 21 July 2003 (21.07.2003)	Priority date (*day/month/year*) 27 August 2002 (27.08.2002)
International Patent Classification (IPC) or national classification and IPC H01M 2/16		
Applicant CREAVIS GESELLSCHAFT FÜR TECHNOLOGIE UND INNOVATION MBH		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 5 sheets, including this cover sheet.

   ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 5 sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the report
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand 23 December 2003 (23.12.2003)	Date of completion of this report 04 May 2004 (04.05.2004)
Name and mailing address of the IPEA/EP Facsimile No.	Authorized officer Telephone No.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP2003/007933

I. Basis of the report

1. With regard to the elements of the international application:*

☐ the international application as originally filed

☒ the description:

pages 1-37, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☒ the claims:

pages _____, as originally filed
pages _____, as amended (together with any statement under Article 19
pages _____, filed with the demand
pages 1-25, filed with the letter of 21 April 2004 (21.04.2004)

☐ the drawings:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

☐ the sequence listing part of the description:

pages _____, as originally filed
pages _____, filed with the demand
pages _____, filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language _____ which is:

☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____
☐ the claims, Nos. _____
☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/EP 03/07933

V. **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-25	YES
	Claims		NO
Inventive step (IS)	Claims	1-25	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-25	YES
	Claims		NO

2. Citations and explanations

1. Prior art document

D1: EP-A-1049188
(in particular, paragraphs [0001], [0007]-[0016], [0019]-[0025], [0029]-[0030]; claims 1-6)

2. Novelty and inventive step (PCT Article 33(2) and (3))

2.1 D1 discloses separators for high-power lithium batteries ([0007]), said separators being based on a polymeric, electrically non-conductive nonwoven ([0023]) in which a lithium ion-conductive glass-ceramic powder is dispersed ([0008]; [0019]; [0022]). The composite membrane is impregnated with an organic electrolyte which contains a lithium salt ([0024]-[0025]). The composite membrane has lithium ion-conductive properties even without the presence of an electrolyte ([0008]).
The distinguishing technical feature of independent claims 1, 14 and 25 is the fact that the ceramic coating is produced and is present in and on a substrate having polymer fibers and that a lithium ion-conductive compound is chemically bonded to the inorganic coating. The resultant effect is the prevention of a melt down of the separator combined with good lithium ion conductivity

(application: page 7, lines 4-15; page 13, lines 20-24). The objective technical problem is the development of a separator for lithium ion batteries which has a high safety level combined with good lithium ion conductivity (application: page 4, lines 13-25). Nothing can be found in D1 that suggests applying a ceramic coating in and on the polymer nonwoven and providing this coating with a lithium ion-conductive material by means of chemical bonding. Claims 1 to 25 are therefore novel and inventive.

3. Industrial applicability (PCT Article 33(4))

3.1 The invention can be used in batteries and therefore meets the requirements of PCT Article 33(4).